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Management and Governance: Planning for an Optimized SOA Application Lifecycle

*Technology That Drives Lower
Software Development and Lifecycle Costs*

March 2007

— Underwritten, in Part, by —





Executive Summary

This report examines the effectiveness of IT investments in three areas of a services-oriented architecture (SOA): operations management; design and operations governance; and underlying changes in project management, development, testing, and application lifecycle management tools.

Key Business Value Findings

Between a third and half of the 950 companies we surveyed in 2006 are having serious difficulties getting their SOA-enabled applications into stable deployment. The survey for this report shows that the predominant reason for these difficulties is inexperience exacerbated by inadequate tools for the automated management and governance of the growing plethora and complexity of web services and applications under an SOA.

There are four characteristics of the top-performing 20% of the companies — the Best in Class — in our survey:

- The Best in Class are most likely (33%) to have more than two years experience with SOA technology;
- 68% of the Best in Class are achieving positive ROI on their SOA investments and are seeing lower application development costs under SOA, while 77% of the overall survey has yet to see an SOA payback achieved;
- The Best in Class companies have implemented design-time governance and re-use policy to minimize lifecycle service costs compared to 26% overall. Close to half of the Best in Class have set minimizing application software lifecycle costs as a measurable management objective.
- More than 80% of the Best in Class have implemented an automated solution to SOA operations and governance, typically with third-party software.

Implications & Analysis

There is a tangible cause and effect relationship between management and governance and overall software lifecycle costs:

- Operationally, SOA introduces a myriad of new design, testing and performance-related issues that can not readily be solved with prior technology or IT elbow grease;
- Design-time governance is where programmers can be “encouraged” to re-use existing services, saving the initial coding time and long-term maintenance costs of writing new but duplicative program code;
- Operational governance ensures that eligible services are given the resources they need, and that performance and security issues are managed. It also helps manage the complexity of loosely-coupled services running on multiple servers in a highly distributed fashion — the hallmark of a SOA.



The inefficiencies caused by a lack of SOA management and governance lower IT performance, raise current operating costs, and collar IT with long-term software maintenance costs that will endure for decades. Fortunately, **none of our survey participants will ignore investments in SOA management and governance.** The Best in Class have it now and the Industry Average company is in the planning stage.

Recommendations for Action

Our extensive research in 2006 and for this report paint a clear approach to achieving superior results:

- **Experience Counts.** Organizations that are dawdling with web services and with no firm enterprise plan for an SOA (and the technology investments that requires) are falling behind their peers. Get the focused training necessary to bring not just specialists but the whole IT organization up to snuff, using outside services where appropriate. SOA is not a fad. It will be with us for decades.
- **Design in SOA Management and Governance.** Manageability of loosely-coupled services, re-use policies, and security are all most economically designed in rather than bolted on after the fact. Technology for automating management and governance is proving its worth at Best in Class companies.
- **Focus on Application Lifecycle Costs.** A systematic focus on the costs of developing and maintaining SOA services, which can be assisted with automation, will result in the appropriate methodologies and policies such as code re-use that drive lower costs of ownership. Without design-time governance, programmers will not re-use services, and lifecycle costs will balloon. The Best in Class companies who are already using automated SOA management and governance are encouraged to take the next step in operational excellence by concentrating on processes to minimize costs across the application lifecycle. One area they should focus on is quality, which is a major aim of the SOA application lifecycle.

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Chapter One: Issue at Hand

Key Takeaways

- A strong focus on management and governance is a key to wringing the most savings out of SOA projects that use core middleware or extend from existing ERP systems.
- The top stumbling blocks to SOA implementation and operation center around operations management and governance issues.
- The key to application lifecycle cost control is governance, especially in driving service re-use at design time.

Aberdeen research in 2006 watched the 90% of Global 10,000 organizations that have embarked on SOA journeys. The vast majority of IT executives and other senior executives are convinced that a service-oriented architecture (SOA) is the right technology path to improve IT agility and lower the 40% of IT budget dedicated to application integration. We can all salute that flag.

The problem is that each organization's "SOA journey" takes a different path. We have identified [three major classifications](#) to describe SOA strategies:

- **SOA Lite**, for the half that are calling web services "SOA";
- **Enterprise SOA**, for the 30% that are building around core SOA infrastructure middleware; and
- **ERP SOA**, for the 20% that are building their SOAs from their ERP vendors' SOA middleware capabilities.

Importantly, while SOA may be the solution, it's not a painless cure for the pain of integration. In fact, between a third and half of the 950 companies we surveyed in 2006 are having serious difficulties getting their SOA-enabled applications into stable deployment (Figure 1). These problems can be lumped into five major categories of yellow-flags for IT executives:

1. **Poor operational control** of the loosely coupled applications, including security;
2. **Inadequate control over programmers:** SOA application creation, re-use, and modification;
3. **Unanticipated deployment issues** regarding performance and scaling, and testing issues caused by the new development methodologies inherent in Web services and SOA, and simplifying the inherent complexity in SOA;

Competitive Framework Key

The Aberdeen Competitive Framework defines enterprises as falling into one of the three following levels of practices and performance:

Best in class (20%) — practices that are the best currently being employed and significantly superior to the industry norm

Industry Average (50%) — practices that represent the average or norm

Laggards (30%) — practices that are significantly behind the average of the industry

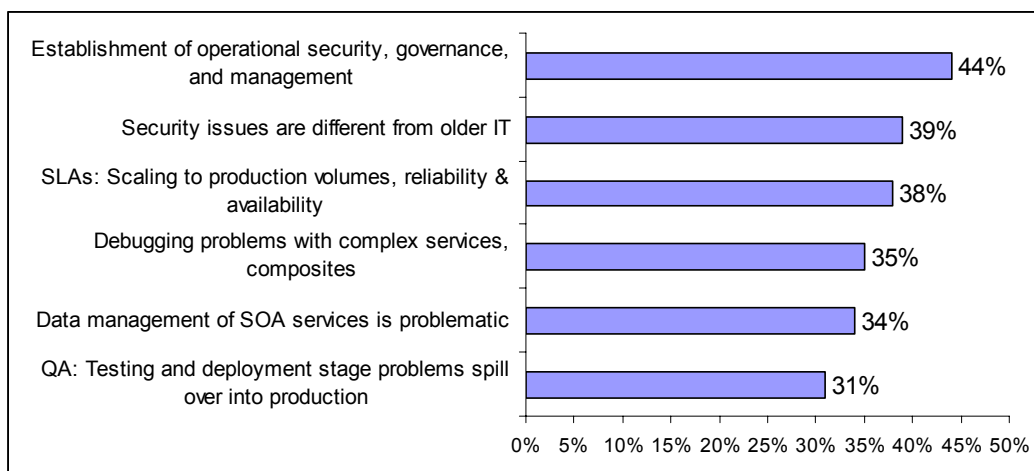


4. **Project management methodologies** that have not kept up with SOA development, testing, and deployment techniques, lowering ROI and raising costs due to inadequate application life-cycle management; and
5. **Inadequate ROI** or difficulty in justifying the ROI of project expenditures.

Based on Figure 1 and the 50% of companies that are not deploying SOA infrastructure software (i.e., SOA Lite), **a significant minority of the Global 10,000 will encounter ongoing SOA operational issues and vexing development problems, which, in turn, will reduce the potential double-digit savings in application lifecycle costs under SOA.**

One key to SOA-based cost reduction is a strong focus on management and governance.

Figure 1: SOA Application Integration Life-Cycle Stumbling Blocks



Source: Aberdeen Group, January 2007

The Components of an SOA Life-Cycle Management Model

There are only bits and pieces of an IT product category called “SOA life-cycle management”. That means IT executives will have to develop their own models for how their organizations will maximize productivity and minimize total life-cycle costs over the decades-long lives of their SOA applications portfolios and infrastructure investments. And the key really is to take a decades-long view. Why? Because the Pandora’s Box that is intractable software integration costs has been opened, and the industry will never return to the tightly-coupled, brittle applications and interfaces we have lived with since the appearance of client-server and relational databases in the early 1990s.



Not only is there no product category of SOA life-cycle management, there is no single, point-product solution either. That means IT executives will be cobbling together technology over the near term until vendors catch up with more integrated product portfolios.

IT executives can succeed in developing their SOA life-cycle management plans by concentrating on three areas:

- **Operational Management** — How does a loosely-coupled SOA change the way applications operate, forcing changes in IT operations?
- **SOA Governance** — How does an SOA affect application design standards, change run-time security and compliance, testing, and impact the overall IT governance framework?
- **Project Management, Development and Application Life-Cycle Management Tools** — What process and technology changes are required to gain the maximum long-term productivity improvements from the impact of SOA on the application portfolio?

PACE Key — For more detailed description see Appendix A

Aberdeen applies a methodology to benchmark research that evaluates the business pressures, actions, capabilities, and enablers (PACE) that indicate corporate behavior in specific business processes. These terms are defined as follows:

Pressures — external forces that impact an organization's market position, competitiveness, or business operations

Actions — the strategic approaches that an organization takes in response to industry pressures

Capabilities — the business process competencies required to execute corporate strategy

Enablers — the key functionality of technology solutions required to support the organization's enabling business practices

Operational Management

Whether or not an organization uses SOA infrastructure middleware such as an ESB, applications increasingly consist of composites of existing “legacy” applications, held together with a loosely-coupled IT infrastructure. SOA services have different workload characteristics than their predecessors. In addition, they behave differently and require new techniques — and likely new technology — to operate efficiently. Key areas of change include:

- Integrating an SOA and its applications with existing enterprise systems management infrastructure to create a services-aware, end-to-end view of business processes;
- Development of new procedures for application crash debugging and recovery;
- Testing and development of new capacity planning benchmarks, performance tuning, and revised response-time thresholds. SOA requires new testing methodologies and testing technology;
- Integration with first-tier IT help desk and vendors' second- and third-tier support;
- Incorporating SOA-specific security into the enterprise IT security plan;



- Development of service-aware Quality of Service requirements; and
- Changes to service-level agreements to reflect these operational changes.

Governance

Governance in an SOA world implies a decision and accountability framework with strong auditing, conformance, and measurement capabilities that support compliance management. Organizations are applying governance throughout the application lifecycle, especially during design and operations stages. Governance is meant to reduce risk and complexity around the common challenges associated with adopting SOA especially defining and reusing services, managing the lifecycle of service assets, and the measuring effectiveness of policies.

At design time, governance can guide decisions on service re-use. The simple equation going forward is that more re-use will result in lower integration costs and the maintenance costs that follow. Our survey for this report shows that **about one-quarter of Global 10,000 organizations are employing design-time governance.**

During service operation, governance software supports the creation and modification of policies that trigger events and actions. It also controls and monitors service use by employees, customers, and business suppliers, as well as across business units. **SOA operational issues become obvious as volumes scale, and especially when multiple application service servers are required to support the workloads.**

Project Management, Development and Application Lifecycle Management Tools

The SOA application development and maintenance lifecycle is different from prior software lifecycles, even though organizations use the same phases of design, coding, testing, quality assurance, and deployment. To us, SOA is a standards-based descendent of the object-oriented development techniques that became popular in the early 1990s. But object-oriented C++ applications never became widespread among the Global 10,000, even though the language did. Will the industry lose the opportunity for lower application/service lifecycle costs as it did by failing to use the full re-use capabilities of object-oriented C++?

In a SOA, applications are no longer silos of program code; they're incorporated into services. Nevertheless, the lifecycle revolves around the following long-used concepts and techniques, updated to use a services-centric view and with a keen eye to re-use:

- Managing module versions of services and service components, including legacy applications;
- Assessing and managing change impact on SOA operations and services;
- Fostering re-use, quality, performance, and testing of services;
- Employing SOA debugging, performance management, and recovery techniques; and
- Integrating legacy custom programs, third-party independent software applications (e.g., ERP), and new application definition technology, especially [BPM and related BPM models](#).

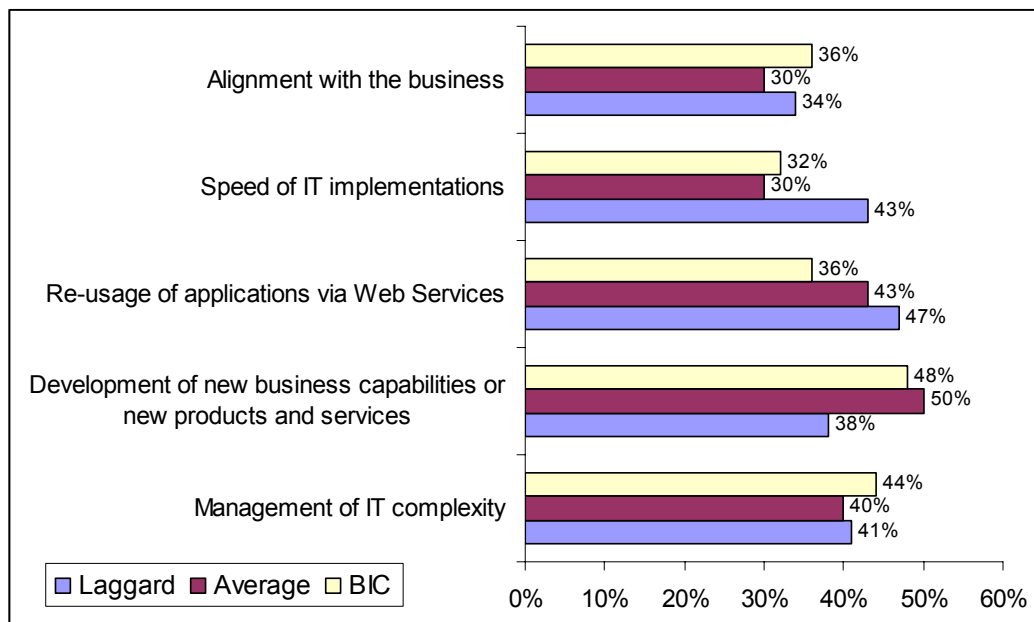


Our recent survey on [building better composite applications](#) revealed that 75% of Best in Class organizations are unhappy with their application development tools and plan to supplement or replace this technology in the next six months.

The Drivers for SOA Management and Control

The most important driver in this survey is developing new business capabilities or products and services for the business (Figure 2). Best in Class companies are focusing more on managing IT complexity, which is increasing with the growing use of web services and SOA.

Figure 2: Business Drivers for Investments in SOA Management and Governance



Source: Aberdeen Group, January 2007



Chapter Two: Key Business Value Findings

Key Takeaways

- Get your organization up the SOA experience curve as soon as possible.
- Dealing with SOA operational issues requires rethinking existing IT operations processes and updating them.
- Third-party IT services are seen as a first response in bringing on needed experience and SOA best practices quickly.

Experience Counts

There is a high correlation in this survey between the overall maturity ranking in Aberdeen's framework and experience with SOA technology (Figure 3). More than half of the Best in Class companies in our survey have at least 12 months of production experience with deployed applications under an SOA, while only 30% of the whole survey had this experience. But 20% of the Industry Average and Laggard companies in this survey had only six months or less of experience, twice as many as the Best in Class.

Readers should consider this "experience counts" finding carefully. The good news is that there is light at the end of the tunnel for many companies riding the SOA learning curve. The challenge is how to best use the training period to best long-term advantage.

Finally, we note a prescient comment from a university IT manager, who stated: "The more experience we got, the more we realized what we didn't know. That made us realize we needed outside help from services vendors and more peer-support efforts."

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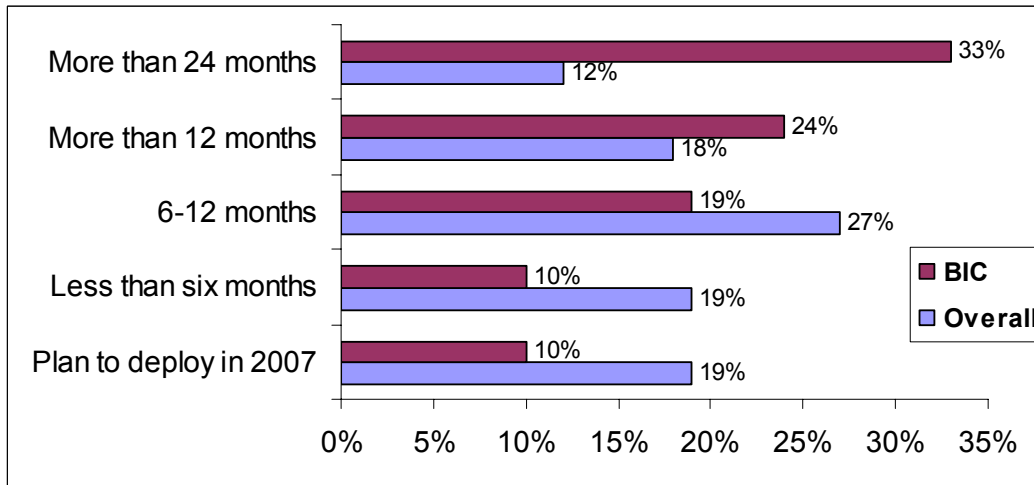
~ University IT manager

IT Drivers for SOA Management and Governance

For 45% of the survey pool – and 46% of supply chain-oriented organizations -- the top driver for SOA management and governance is developing new business capabilities or new products and services (Figure 4). Management of IT complexity is second at 42% overall, yet a more apparent pressure for the Best in Class at 44%. This difference in priority is caused by the greater experience levels of the Best in Class. "The first application-services server was a piece of operations cake", a consumer products goods manufacturer told us. "But by the fifth server, we really did not know what was going on inside at any given moment, and that got scary quickly."



Figure 3: Length of Time Since First SOA Services Were Deployed



Source: Aberdeen Group, January 2007

SOA Operations Challenges and Responses

Standing in the way of optimized SOA operations is establishment of operational security, governance, and management (Table 1). Twice as many survey respondents cite this as a top challenge over Best in Class companies. The key reason cited is the IT complexity an SOA operations environment creates. The desire to manage IT complexity raises the challenge of establishing operational security, governance, and management.

SOA security is the second challenge, with about the same numbers of Best in Class and all other respondents citing the differences and complexity that a loosely coupled, behind-the-firewall SOA environment presents to IT operations. The third challenge: debugging, caused by the different architecture of loosely-coupled SOA services compared to most prior IT applications using conventional programming techniques.

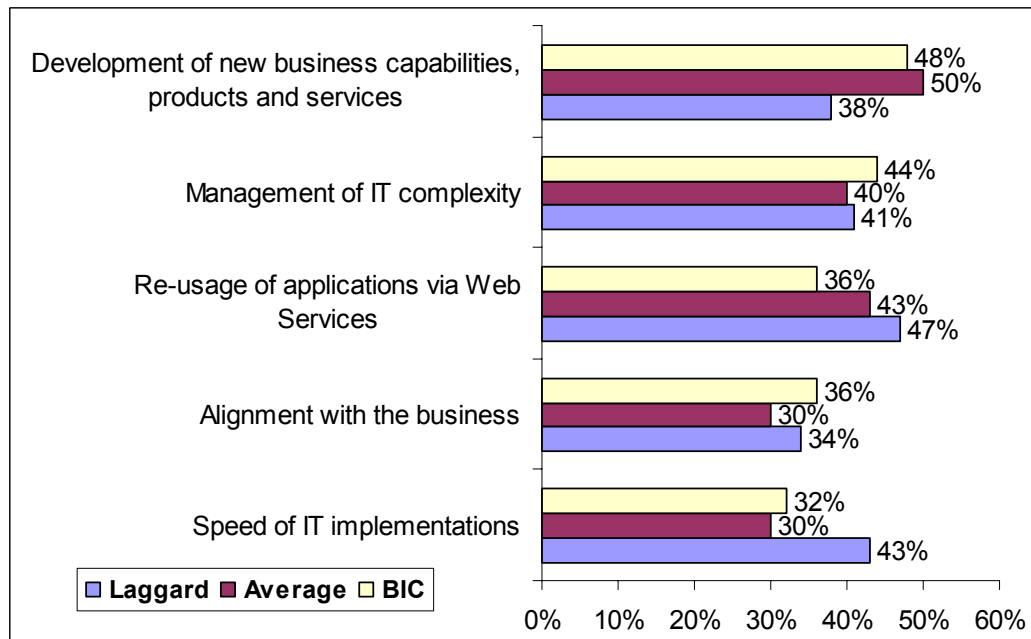
In response to these challenges, the **top response, chosen by 45% of our survey, is to revise application lifecycle processes and responsibilities.** This challenge is best illustrated by an automotive parts manufacturer who told us, *"With SOA, we were forced to rewrite whole chapters of our IT processes manual...and that's not a bad thing".* Second, 41% of our survey have engaged third-party IT services firms for consulting, evaluation, and assessment. But only 25% of the Best in Class companies are taking this route since they tend to be more experienced.

"With SOA, we were forced to rewrite whole chapters of our IT processes manual...and that's not a bad thing."

~ Automotive parts manufacturer



Figure 4: IT Drivers for SOA Management and Governance



Source: Aberdeen Group, January 2007

Table 1: SOA Operations Challenges and Responses

Challenges	% Selected	Responses to Challenges	% Selected
Establishment of operational security, governance, and management	45%	Revised our application lifecycle process and responsibilities	45%
Security issues are different from those of older IT	38%	Engaged third-party IT services consulting, evaluation, and assessments	41%
Debugging problems with complex services, composites	37%	Purchase or plan to purchase SOA operations management software	28%
SLAs: Scaling to production volumes, reliability and availability	37%	Purchase or plan to purchase SOA security software	26%
Data management of SOA services is problematic	33%	Invested in additional operations and applications lifecycle training	22%
QA: Testing and deployment stage problems spill over into production	31%	Bought additional computer capacity to minimize performance/capacity issues	19%

Source: Aberdeen Group, January 2007



Chapter Three: Implications & Analysis

Key Takeaways

- Existing processes do not apply well to new SOA operations and governance issues and require changes.
- Best in Class companies achieve performance excellence in SOA operations and governance, partly through the use of SOA-specific technology.
- Using operations, governance, and application lifecycle management technology, Best in Class companies are focused on — and achieving — lower long-term costs.

As shown in Table 2, survey respondents fell into one of three categories — Laggard, Industry Average, or Best in Class — based on their characteristics in four key categories: (1) process (investment/payback metrics, SOA-specific processes and governance); (2) organization (SOA IT topology, governance philosophy); (3) knowledge (visibility into operations, governance, and lifecycle cost data); and (4) technology (scope of SOA management and governance automation, productivity tools).

In each of these categories, survey results show that firms exhibiting Best in Class SOA operations and governance characteristics also enjoy Best in Class application lifecycle performance and payback on their companies' SOA investments (Table 2).

Table 2: SOA Operations and Governance Competitive Framework

	Laggards	Industry Average	Best in Class
Process	Using existing IT operations processes not adjusted for loosely-coupled SOA architecture and technology	Some SOA operations processes have been planned or are in place; modest SOA governance activities	SOA-tuned operations; IT governance accounts for SOA design and operations; application lifecycle cost awareness.
Organization	SOA has not caused a change in organization.	Changes planned or newly implemented	Roles and responsibilities revised for SOA operations and governance.
Knowledge	Limited SOA experience means no visibility of pitfalls ahead; modest problems due to limited scale, experience.	Knowledge limited to key personnel and not scalable; challenged and reactive to unanticipated operations and governance crises.	Experienced veterans who have widespread hands-on SOA production experience; management has changed goals and metrics based on experiences.
Technology	"SOA Lite" web services; no special SOA operations; no IT governance or SOA governance automation; project-based ROI	Increasing SOA middleware use; plans and some purchases of operations, governance, and application lifecycle automation	Enterprise middleware technology supplemented by SOA operations and governance automation; lifecycle-based application ROI

Source: Aberdeen Group, January 2007



Process and Organization

In the process category, companies in the survey that employ SOA operations automation products and SOA-related governance consistently achieve much higher ROI on their SOA investments. Some 40% of the Best in Class companies earned a payback of more than \$1 million on their SOA investments, compared to 17% of the survey overall. Laggard firms are trying to get by with both the existing processes and organization.

Technology Provides Leverage to the Best-in-Class Companies

Best in Class firms in our survey are employing SOA operations management software to automate the SOA-specific services they're deploying, as well as SOA governance software, typically an upgrade from an existing automated IT governance software package's processes. The Best in Class companies are focusing on the entire life of an application "service", from design through programming, testing, deployment, and into maintenance.

We asked, "How has SOA development in the past year changed the IT costs of the application/service lifecycle?" As Table 3 clearly shows, the automation investments by the **Best in Class resulted in decreases in development costs in 2006 while the majority of Industry Average and Laggard companies are actually seeing their development costs increase.**

Importantly, 58% of Laggard firms are *not taking action* to treat SOA operations, governance, and the resulting lifecycle costs as anything different from past processes. These companies are least likely to use SOA operational management, governance, and application lifecycle management software.

Table 3: Application Lifecycle Cost Changes by Maturity Framework – 2006

	Laggards	Industry Average	Best in Class
No change	55%	43%	12%
Increased costs up to 5%	24%	14%	4%
Increased costs 6-10%	2%	12%	4%
Increased costs 11-20%	4%	8%	4%
Increased costs 21-30%		2%	8%
Increased costs more than 30%	7%	1%	
Decreased costs up to 5%	5%	8%	28%
Decreased costs 6-10%	2%	7%	12%
Decreased costs 11-20%	2%	4%	12%
Decreased costs 21-30%			8%
Decreased costs more than 30%		1%	8%

Source: Aberdeen Group, January 2007



Pressures, Actions, Capabilities, Enablers (PACE)

Table 4 shows how operations, governance, and application lifecycle technologies map to the SOA-driving pressures that were listed in Chapter Two. These findings highlight issues cited in previous Aberdeen research in 2006, namely:

- The biggest challenge in corporate IT organizations is improving real-time visibility into business operations;
- Business is discovering the SOA as a technological foundation that can make businesses more nimble and business processes more flexible with less IT intervention than prior approaches; and
- As organizations gain more experience with SOA technology and methodologies, they realize that currently used approaches and methodologies do not match well with the best practices in using an SOA.

Table 4: Prioritized Pressures and Enablers

Priorities	Prioritized Pressures	Prioritized Enablers
1	Development of new business capabilities, products, and services	* Harnessing custom and third-party applications, such as ERP, under an SOA * Building composite applications
2	Management of IT complexity	* Enterprise SOA middleware technology * SOA operations management technology * SOA governance technology
3	Re-use of applications via Web Services and SOA	* Design-time governance software * Application lifecycle management software
4	Speed of IT implementations	* Design-time governance software enables service reuse, quicker delivery * SOA governance and application lifecycle management software keep projects on track
5	Alignment with the business	* Composite applications that span at least some of the following: legacy applications, ERP, best-of-breed applications, web-hosted/On Demand applications, customers' or suppliers' applications * Design-time governance software enables service reuse, quicker delivery

Source: Aberdeen Group, January 2007

Governance Views by Industry

Not all industries have the same view on the importance or management reason for a formal IT governance policy (Figure 5). The findings from our survey make it clear that

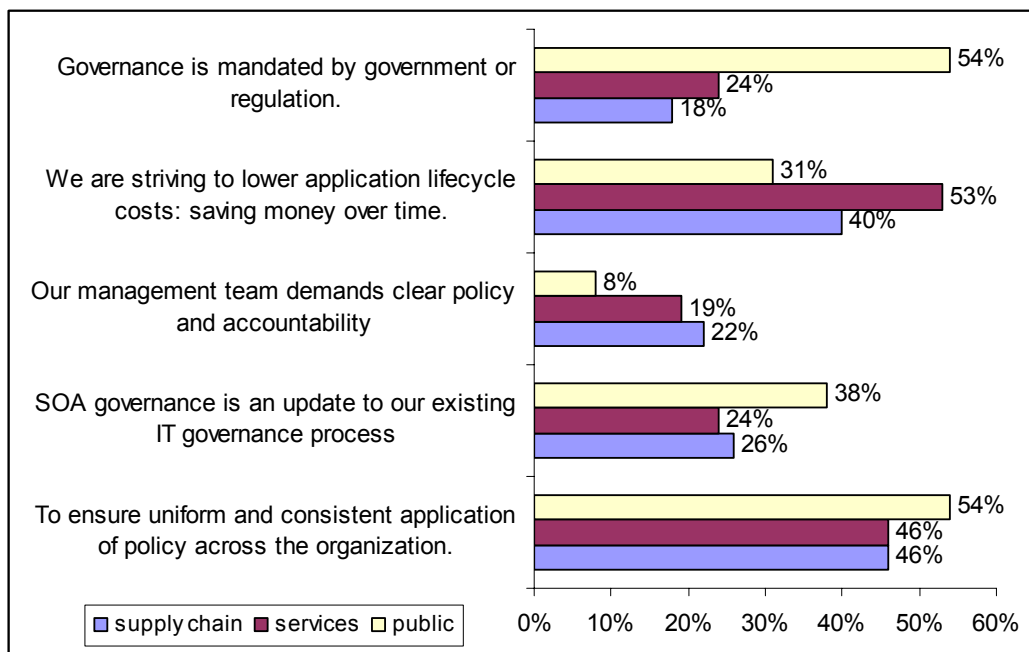


governance of SOA design, operations, and policy management are critical factors in achieving process excellence and higher results, especially over time, to wit:

- **None of our survey participants will ignore governance going forward**, even those whose companies have not implemented IT governance policies to date;
- The Best in Class companies are most likely to have existing IT governance policies in place, updated to reflect the necessities of an SOA environment; and
- The strong correlation between use of governance (and application lifecycle) automation and higher SOA investment payback, resulting in overall lower application development costs.

The public sector is driven by regulation. But the services industry is strongly driven to governance as a means of lowering application lifecycle costs.

Figure 5: SOA Governance Drivers by Industry



Source: Aberdeen Group, January 2007



Chapter Four: Recommendations for Action

Key Takeaways

- The larger the company, the greater the need for management by IT governance policy, preferably automated.
- Focus on the long-term goal of lowering application lifecycle costs and avoid the tendency to look to take a short-term project ROI while increasing long-term costs.
- Since Best in Class companies are also the most experienced, proactively utilize training and IT services to speed up the learning curve.

Cost control of the application lifecycle is a long-term benefit worthy of management's attention. Best in Class companies in this survey are most likely to have well-defined processes for managing and governing SOA design and operations, including the use of application lifecycle management software and IT governance software to automate the process. And, these companies are not paying lip service to the subject. To reinforce this point, users need both SOA operations management as well as governance. This is not an "either/or" choice, nor are the two mutually exclusive.

As an airline IT executive told us: "There are too many moving parts in our IT operations not to have applications watching applications — and programmers. That's the only way we can sleep at night."

"There are too many moving parts in our IT operations not to have applications watching applications — and programmers. That's the only way we can sleep at night."

~ Airline IT executive

Based on the information in Chapters Two and Three, readers should determine whether their organizations fall into the "Laggard", "Industry Average," or "Best in Class" categories. The key to gaining value from this report is moving your organization along the maturity path to Best in Class. The following actions will help spur necessary performance improvements:

Best in Class Next Steps

1. *Build out your SOA infrastructure* — methodically.

Plan and deploy the SOA middleware — enterprise service bus, repository, security, management and governance — needed to support your organization's long-term plans. That may well require an enterprise-level capital expenditure since the cost won't fit into a project budget. Even many Best in Class firms have yet to complete this task.

2. *Tighten governance, especially at design time.*



With experienced companies reporting code re-use in the 50%-70% range under SOA, there is a lot of value to shoot for. However, it will cost more to develop reusable code. Employ tight project schedules and lifecycle-cost focused re-use planning as governance techniques.

3. *Aim for the application lifecycle cost “brass ring”.*

Focus programming governance efforts on a best-practices program to drive all aspects of lowering costs in the lifecycle of applications.

Industry Average Steps to Success

1. *Upgrade from Web services to an Enterprise SOA infrastructure plan.*

The allure of improved IT agility using [composite applications](#) constructed with Web services should be tempered with the reality of a plan to quickly build out an Enterprise SOA infrastructure as described in Chapter 1. SOA infrastructure middleware is a prerequisite to scalable, well-mannered IT operations.

2. *Anticipate increasing complexity*

Survey participants tell us IT complexity (especially in operations) increases almost exponentially at first as more SOA services and servers are added. The internal costs of disruption can be high and hinder ongoing project roll-outs. Accelerated training programs, SOA management software, and the judicious use of third-party IT services are the ingredients for getting over the complexity hump of the learning curve.

3. *Turn SOA governance plans into reality*

Every company in our survey believes there is an SOA governance process in their future. Many are at the planning stage. Automating SOA governance is an investment the vast majority of mid-size and large companies ought to make.

4. *Start planning for the control of application lifecycle costs*

This survey clearly demonstrates that design-time and programming extra effort can lower application lifecycle costs through code reuse at 50% and above. Start planning by measuring application lifecycle costs, examining whether current SOA development practices encourage “one time” programming or reuse. Consider automated lifecycle management tools as part of the development governance process.

Laggard Steps to Success

1. *Establish operational security, governance, and management policies and processes.*

The old, but true, adage is “you can’t manage what you can’t measure.” Too many Laggard organizations lack the process, let alone automation, for the process. Start with SOA operations, then move to design governance, revising application lifecycle processes and responsibilities along the way.

2. *Fix the lack of management support to drive SOA governance as a means to lowering lifecycle costs.*



More than one-third of Laggard organizations face management that is not convinced of the long-term benefits of governance as a way to lower application lifecycle costs. This report is ammunition, but driving SOA governance will require more company-specific proof points. For example, a 50% code re-use under SOA governance cuts the lines of code maintained in half permanently.

3. *Plan for the long haul.*

The ROI of too many SOA projects are justified under business-as-usual rules favoring project-based ROI. That approach won't unlock the long-term value to the entire organization of lower application lifecycle costs or solve the management of IT complexity issues driven by a growing use of SOA. Our 2006 surveys showed that companies following an "Enterprise SOA" strategy (see Chapter 1) can scale more easily with lower short- and long-term costs by investing in all aspects of SOA infrastructure software and in IT staff training.

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Mindreef provides Web services and SOA testing solutions that allow organizations to drive pervasive quality into SOA deployments, and accelerate service reuse and business agility. Mindreef's award-winning SOAPscope and SOAPscope Server reduce the complexities of Web services and XML, empowering teams with prototyping, compliance, testing, diagnostics, and support tools that improve SOA quality throughout design-time, change-time and run-time. Mindreef solutions help analysts, architects, developers, testers, operations and support staff to ensure quality as they build, test, and deploy Web services and composite applications. Mindreef products are used by over three thousand customers at over 1,200 organizations worldwide, including 40 of the Fortune 100.

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Appendix A: Research Methodology

Between November 2006 and January 2007, Aberdeen Group examined the SOA management strategies of more than 200 companies across a variety of geographies, industries and company revenues.

Aberdeen supplemented this online survey effort with telephone interviews with select survey respondents, gathering additional information on SOA management strategies, experiences, and results.

The study aimed to identify emerging best practices for SOA operations management and governance, and provide a framework by which readers could assess their own organization's capabilities and maturity.

Responding enterprises included the following:

- **Job title/function:** About half of the survey respondents are in their organizations' IT departments. The research sample included respondents with the following job titles: senior executive (CEO, COO, CFO, VP) (13%); CIO (11%); IT manager or director (32%); internal consultant (21%), and IT staff (8%).
- **Industry:** The research sample included respondents predominantly from manufacturing industries and companies with a supply-chain focus (wholesale, retail, distribution, high tech). These represented 52% of the sample, of which 53% were manufacturing. Services industries including banking, brokerage, insurance, and health care represented 40% of the survey. Public sector (government and education) represented 8% of the survey.
- **Geography:** The survey respondents were distributed: North America (U.S., Canada, Mexico) 57%; Central and South America 4%; Asia/Pacific 16%; Europe, Middle East, and Africa 24%.
- **Company size:** About 46% of respondents were from large enterprises (annual revenues above US\$1 billion, including 27% over US\$5 billion); 38% were from midsize enterprises (annual revenues between \$50 million and \$1 billion); and 28% of respondents were from small businesses (annual revenues of \$50 million or less).

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Table 5: PACE Framework

PACE Key
<p>Aberdeen applies a methodology to benchmark research that evaluates the business pressures, actions, capabilities, and enablers (PACE) that indicate corporate behavior in specific business processes. These terms are defined as follows:</p> <p><i>Pressures</i> — external forces that impact an organization's market position, competitiveness, or business operations (e.g., economic, political and regulatory, technology, changing customer preferences, competitive)</p> <p><i>Actions</i> — the strategic approaches that an organization takes in response to industry pressures (e.g., align the corporate business model to leverage industry opportunities, such as product/service strategy, target markets, financial strategy, go-to-market, and sales strategy)</p> <p><i>Capabilities</i> — the business process competencies required to execute corporate strategy (e.g., skilled people, brand, market positioning, viable products/services, ecosystem partners, financing)</p> <p><i>Enablers</i> — the key functionality of technology solutions required to support the organization's enabling business practices (e.g., development platform, applications, network connectivity, user interface, training and support, partner interfaces, data cleansing, and management)</p>

Source: Aberdeen Group, January 2007

Table 6: Relationship between PACE and Competitive Framework

PACE and Competitive Framework How They Interact
<p>Aberdeen research indicates that companies that identify the most impactful pressures and take the most transformational and effective actions are most likely to achieve superior performance. The level of competitive performance that a company achieves is strongly determined by the PACE choices that they make and how well they execute.</p>

Source: Aberdeen Group, January 2007

Appendix B: Related Aberdeen Research & Tools

Related Aberdeen research that forms a companion or reference to this report include:

- [*The Composite Applications Benchmark Report*](#), December 2006
- [*The Legacy Application Modernization Benchmark Report*](#), September 2006
- [*The Business Process Management Benchmark Report*](#), August 2006
- [*Outsourcing Application Development and Maintenance*](#), November 2006
- [*Enterprise Service Bus and SOA Middleware*](#), June 2006
- [*The SOA in IT Benchmark Report*](#), December 2005

Information on these and any other Aberdeen publications can be found at www.Aberdeen.com.

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